



UNITED STATES NAVY

MEDICAL NEWS LETTER

Editor - Captain L. B. Marshall, MC, USN (RET)

Vol. 24

Friday, 16 July 1954

No. 1

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Notice

Due to the critical shortage of medical officers, the Chief, Bureau of Medicine and Surgery, has recommended and the Chief of Naval Personnel has concurred that Reserve medical officers now on active duty who desire to submit requests for extension of their active duty for a period of three months or more will be given favorable consideration.

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Hydronephrosis

Hydronephrosis, a term originated by Rayer in 1841, is used to denote changes in the kidney that follow obstruction to the flow of urine. Because so many diseases in or adjacent to the urinary tract are capable of producing obstruction at various levels of the urinary channels, the condition is a very common one. This review is limited to a few of the discussions and observations over the years that have probed into the anatomic, physiologic, diagnostic, and surgical aspects of the subject.

Ligation or complete obstruction of the excretory duct of other body glands is followed by a primary type of atrophy. This primary atrophy does not occur when the kidney is similarly treated. Instead, hydronephrosis develops and hydronephrotic atrophy follows, except in rare cases in which blood supply is interrupted or cortical cellular activity is suddenly abolished. Why hydronephrotic atrophy occurs instead of primary atrophy is attributable to the reabsorption of contents from the renal pelvis, which thus permits further production of urine. This phenomenon of reabsorption and further urine production continues until the progressive effects of back pressure ultimately destroy all the functioning elements necessary for urine formation.

Various workers have demonstrated reabsorption of materials injected into the renal pelvis when the ureter is completely obstructed. Tuffier, in 1894, found that strychnine injected into the renal pelvis of a dog produced no sign of poisoning unless the ureter was ligated. Others have injected dyestuffs, drugs, bacteria, and solutions opaque to x-rays into the obstructed renal pelvis to observe the same phenomenon of absorption. The material not only may disappear from the renal pelvis but also may be observable in the blood as well as in the urine produced by the opposite nonobstructed kidney.

Possible explanations for this physiologic event are as follows: absorption from the epithelial lining of the tract (mucosa of pelvis and calyces), absorption via tubular structures of the kidney or absorption into the blood stream through a small traumatic area caused by distention.

The physiologic changes may be summarized as follows. The kidney almost always develops hydronephrosis after partial or complete obstruction of its excretory duct (the ureter) rather than primary atrophy. Hydronephrosis takes place because of reabsorption of urine from the area of the renal pelvis and calyces, permitting continued renal secretion until complete hydronephrotic atrophy occurs.

The routes of reabsorption are believed to be by pyelovenous backflow, pyelotubular backflow, from minute lacerations leading to venous communication adjacent to the calyx, and perhaps by lymphatic channels.

Renal counterbalance deals with balance of function between the severely damaged hydronephrotic kidney and a kidney that has shown compensatory hypertrophy, on the basis of need for total renal function.

The classic symptom of lumbar pain from hydronephrosis is well known, but the physiology of renal pain and its possible variations are often forgotten. Renal pain, except perhaps in the presence of acute inflammation, is caused by obstruction to the flow of urine from the kidney. The more acute and complete the obstruction, the more acute or violent the pain. The converse is also true. Less abrupt or partial obstruction causes less acute pain. If partial obstruction has been present since birth and has increased at an extremely slow rate the patient may be unable to recall any pain whatever, even though a large hydronephrosis is present. The author has demonstrated this actuality in physicians who were patients, as well as to physicians who were surprised that their patients had a large hydronephrosis with only minimal symptoms of discomfort. Of course, examination of the urine may be negative in all respects if no infection is present.

Aside from the characteristic pain in the kidney area as an indication of hydronephrosis, gastrointestinal symptoms are frequently the complaint that causes the patient to seek medical advice. Presumably, the symptom originates on a reflex basis or, if the hydronephrosis is large, on the basis of pressure.

The cause and diagnosis of hydronephrosis require pyelographic examination. One has to demonstrate the level of the obstructive process, as well as its nature.

Because the cause of hydronephrosis is obstruction, the cure necessitates either removal of the obstruction or removal of the kidney by surgical means. This discussion is limited to concepts and procedures dealing with obstruction at the level of the ureteropelvic junction.

The decision whether to do a reconstructive operation or nephrectomy depends on the age, general condition, activities, and occupation of the patient, the potential functioning capacity of the kidney in question, and the presence and condition of the opposite kidney. Each case should be decided on its individual considerations.

Conservative renal surgery for the relief of hydronephrosis entails eliminating the obstructive factor and retaining the kidney as a functioning unit. According to Berneike and Deming, the criteria of success for this type of surgery are fourfold: relief of symptoms, improvement in function, disappearance of infection, and disappearance of dilatation.

To summarize progress in the surgical treatment of hydronephrosis, one must first evaluate the degree and probable cause of the condition. If the change is minimal, it may be advisable to postpone operation and have periodic studies made to ascertain whether the condition is static or progressive. There should be a definite indication for surgical interference either by symptoms or by pyelographic evidence before operation. The condition of the opposite kidney often influences the advisability as well as the type of operation that is best for the particular patient.

In general the decision for reconstructive surgery, rather than nephrectomy, will be favored if it is estimated that an uninfected, hydronephrotic kidney is capable of performing one quarter or more of the total renal function. That amount of renal tissue would sustain life if the opposite organ met with serious misfortune. The physical and economic drain on the patient will, of course, be longer than that after nephrectomy.

The type of plastic repair to be used will be influenced by the problem at hand and by the success of certain operations in the experience of the particular surgeon. It should be remembered that in the success of any surgical procedure the surgeon is just as important a component as the method that is being employed. No doubt with the idea of renal counterbalance in mind Hinman once wrote, "This policy of surgical repair so boastfully endorsed by many shows operative skill only without understanding or judgment of renal physiology."

Nephrectomy may well be the best operation if there is little renal tissue left and if the opposite kidney is sound. (New England J. Med., June 3, 1954, G. C. Prather, M. D.; Harvard Medical School, Boston, Mass.)

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Cystectomy for Advanced Carcinoma of the Bladder

Two major problems are involved in the successful surgical treatment of carcinoma of the bladder: (1) the preservation of kidney function, and (2) the excision of the tumor. The first has been attended by a large measure of success. The procedures for transplanting the ureters, and the advances in postoperative therapy, have made this part of the surgical treatment comparatively safe for the patient. The excision of the growth is still in a process of evolution. Simple cystectomy has given way to total cystectomy (namely, with prostatectomy and seminal vesiculectomy in the male, and with panhysterectomy in the female.) Total cystectomy, in turn, is now coupled with extensive pelvic adenectomy--called by some "radical cystectomy."

This article deals only with cases of advanced bladder tumor, involving more than one-fourth of the bladder, with deep infiltration of the muscularis, serosa, and perivesical spaces, and with enlarged pelvic lymph nodes. One hundred and six such cases have been reviewed; of these, 99 were males and 7 females.

From the standpoint of treatment, the cases reviewed fall into three groups: (1) those with transplantation of the ureters to the rectosigmoid only, (2) those with ureteral transplantation and total cystectomy, and (3) those with ureteral transplantation, total cystectomy, and extensive lymph node dissection.

The author's aim was to determine whether any of these procedures is justified and, by a comparison of the survival rates of the three groups, to ascertain which method gave these patients the greatest measure of palliation.

The immediate postoperative mortality rate was about the same (approximately 10%) in the three groups. In the first two groups, there were no survivals beyond the third year. In the third group--radical cystectomy--8 patients (13%) survived more than 3 years; of these, 3 were operated upon from 4 to 6 years ago, with no signs of recurrence.

The late causes of death are analyzed and the major ones discussed. By far the most frequent cause was local pelvic recurrence.

The possibility of the spread of cancer cells through the vascular channels at the time of operation is considered.

From the author's results in this series of cases, it is concluded: (1) That bilateral transplantation of the ureters alone is unsatisfactory. (2) That bilateral ureteral transplantation with total cystectomy shows little better results. (3) That total cystectomy with extensive pelvic adenectomy gives the best palliative results. More than that, in a few cases there apparently was complete extirpation of the growth. (4) It is the author's belief that this is the operation of choice, and should be the standard procedure for the early case. (J. Urol., June 1954, E. Sayegh; American Mission Hospital, Tanta, Egypt)

Urinary Calculi in Pregnancy

The textbooks of obstetrics and gynecology and the literature in general reveal a paucity of information on urinary calculi in pregnancy and the English literature of the past 20 years contains only scattered references to this problem. Although the incidence of this complication of pregnancy is low, there is little information available for any physician faced with this acute and often urgent complication.

The symptoms and findings in the order of frequency, as listed by Arnell and Getzoff, are costovertebral pain and tenderness, abdominal pain and tenderness, fever, pyuria, hematuria, nausea and vomiting, frequency of urination with dysuria, chills, and muscular spasm.

The differential diagnosis in pregnancy includes in the order of frequency: pyelitis, pyelonephritis, acute appendicitis, cholecystitis, a general gallbladder symptom complex, and extrauterine pregnancy.

The identification of renal calculi in pregnancy should not be difficult if the clinical features are kept in mind, and if proper diagnostic procedures are instituted. Any patient with severe costovertebral pain and tenderness or severe abdominal pain and tenderness accompanied by fever, nausea, and vomiting, must be suspected of having a stone with associated infection. If, in addition, the patient complains of urination with burning, and intermittent chills, the urinary origin of the disease process becomes more apparent. Urine specimens must be examined for pyuria and hematuria and must be obtained by catheter to have critical diagnostic significance. Exploratory scout films after suitable preparation are possible and intravenous pyelograms are most often diagnostic. The most commonly confused syndrome, which is also much more frequent, is pyelocystitis in pregnancy.

Therapy should be different for each of the three trimesters of pregnancy. It seems to be well established that active interference is the treatment of choice in the first trimester unless the condition is latent and is producing no obstruction. Such active treatment should be cystoscopic manipulation whenever possible. Nephrotomy or ureterotomy is necessary when the ureteral approach fails. Expectant therapy at this time carries the risk of serious complications at a later period in pregnancy when surgery is not only more difficult but also many times more dangerous, and often impossible. The general principle, therefore, that obtains at this time is that surgical removal of both renal and ureteral stones should be carried out in the first trimester whenever there is obstruction. In most instances such therapy will not disturb the pregnancy.

In the second trimester of pregnancy the kidney is still available to surgical attack and renal calculi may be removed safely when necessary; that is, when the symptoms are severe and/or obstructive damage is being done to the kidney. To a lesser extent, this is also true of calculi located in the upper one-half of the ureter. The lower one-half of the ureter at

this time becomes progressively less accessible and, furthermore, surgical intervention is dangerous at this time because of the tremendous enlargement of the related blood vessels. If an obstructing stone is not passed spontaneously within a short period after the onset of symptoms and, particularly, if expectant therapy is of no avail and the obstruction is complete or nearly complete, some intervention is mandatory. These cases should then be grouped with similar cases in the third trimester of pregnancy as far as therapy is concerned.

In the third trimester of pregnancy the urinary tract should not be subjected to surgery for calculus, with the exception of a lifesaving nephrostomy. The urinary tract is not often even accessible for safe cystoscopic manipulation and, therefore, a ureteral attack on the stone is contraindicated. Again, if conservative and symptomatic therapy does not ameliorate the severe symptoms and if the patient has any degree of obstruction which is likely to cause permanent damage to the kidney, interference becomes imperative. The safest method and the one most likely to be successful appears to be evacuation of the uterus. (Am. J. Obst. & Gynec., June 1954, E. M. Solomon, M. D.; Northwestern University Medical School, Evanston, Ill.)

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Postoperative Thyroid Storm

The syndrome known as thyroid storm or crisis, although frequently encountered in the early days of thyroid surgery, is not often observed today. This is due to more adequate preparation of toxic patients for surgery with the thiouracil group of drugs.

The prompt recognition of this most fearful postoperative complication is essential to avoid undue mortality. Death in this state results from the various complications which are associated with increased metabolism and which often are inadequately treated. Patients experiencing medical storm are much more toxic than those having surgical storm. Indeed, the mortality rate for medical storm is close to 100%. The treatment thereof is ineffective. Although the underlying physiologic principles of this syndrome are not understood it is essential that its presence be sensed at once so that emergency treatment may be given to control it.

Thyroid storm is a condition characterized by uncontrolled hyperthyroidism. This complication may occur prior to an operation but usually happens postoperatively. All the symptoms of thyrotoxicosis are markedly exaggerated and disproportionate to the stimulating factor. As McArthur et al. point out, thyroid storm essentially represents the inability of the patient to adjust himself any longer to the strain imposed by the hyperthyroidism and it might be called decompensated thyrotoxicosis. Under

these circumstances, it is impossible to determine the basal metabolic rate, and nothing but a spurious result could possibly be obtained, because of the patient's extreme restlessness. In all probability, the oxygen consumption and heat production become far greater than in any other disease known. From both the pathologic and physiologic points of view, no one as yet has been able to explain the mechanism of thyroid crisis. There are no pathognomonic features which are common to all cases.

"From the correlation of the clinical and postmortem studies, there is not sufficient proof to indict the heart as the primary site of the difficulty in patients in whom thyroid crisis develops. Certainly, such patients may die a so-called cardiac death, but in the absence of specific myocardial lesions, it is safe to assume that perhaps failure is on a physiologic rather than pathologic basis." The many cases reported to date indicate that the symptoms of thyrotoxicosis are progressively augmented as they pertain to each of the great body systems (central nervous, cardiovascular, and hepatorenal systems), until death or recovery takes place. Clinical and necropsy findings disclose a breakdown of one of these main body systems. Findings at autopsy are not uniform or pathognomonic in all cases.

The deaths in thyroid crisis are frequently "cardiac deaths," at least terminally, and this aspect has received universal attention. There are 3 opinions concerning thyroid disease and the heart: (1) Thyrotoxicosis has no effect on the heart except to increase the metabolic activity; (2) thyroid disease causes myocardial damage, hypertrophy of the heart, and various clinical cardiac manifestations; and (3) thyrotoxicosis acts only as a catalytic agent and brings to the surface latent cardiovascular lesions.

The outstanding manifestation of thyroid storm is the apparent failure of the heat-regulating mechanism in the body, and this is usually associated with a rapid pulse, flushed face, profuse sweating, and extremely cold extremities, and an elevated temperature. The body temperature generally rises above 103° F. and may even rise as high as 107° F. The pulse ranges from 120 to 160 per minute or faster. Quite frequently it races so fast that it is imperceptible. The patient exhibits extreme restlessness and becomes very apprehensive. Talkativeness merges into delirium. The terminal picture is one of delirium psychosis, coma, and death. Occasionally thyroid storm is characterized by nausea, vomiting, and diarrhea, in addition to those symptoms already listed.

As has been stated, the etiology of this syndrome is still unknown. In spite of extensive physiologic and pathologic search of the nervous, cardiovascular, and hepatorenal systems, the thymus and adrenal glands, and chemical analysis of certain elements in the circulating body fluids, no conclusion has been reached.

Present-day management of thyroid storm is essentially symptomatic. (Postgraduate Medicine, June 1954, Essex Bldg., Minneapolis 3, Minn.; T.A. Lamphier and W. Wickman)

Cirrhosis of the Liver

This article discusses certain historical and general aspects of cirrhosis and three of the important clinical manifestations of the disease; viz., jaundice, portal hypertension, and hepatic coma. Emphasis is placed upon the clinical aspects, that is, what one may observe in a patient with the disease, together with the pathologic and pathophysiologic correlations when they are known and germane.

Jaundice--Icterus is, of course, due to bilirubin visible in the skin and sclerae. It is such a common accompaniment of severe liver disease that one is tempted to consider it the sine qua non for the diagnosis of cirrhosis. Such an assumption is far from the truth. In fact, the majority of patients with cirrhosis do not have overt or visible jaundice. Measurement of the concentration of bilirubin in the blood plasma or serum is a more accurate measure of the degree of jaundice than is simple inspection. Here again, however, many patients have extensive liver disease and suffer from one or another of its complications and yet have a normal total serum bilirubin concentration.

The degree of jaundice (or of bilirubinemia) may be considered a good measure of the activity of the liver disease in the patient with liver cirrhosis; that is, the degree of jaundice roughly parallels the extent of hepatocellular disease and appears to be less well related to the extent of fibrosis. This correlation is by no means an absolute one but the bilirubin concentration is a better clinical indication than almost any other of the degree, extent, and, especially, activity of liver cell damage.

Portal hypertension--The unique circulation of the liver, which receives an estimated 85% of its blood from the gastrointestinal tract via the portal vein and 15% as arterial blood from the hepatic artery, makes a variety of circulatory disturbances possible in patients with diseases of this organ. Clinically the most important of these is portal hypertension; that is, an increase in pressure in the portal venous system. The clinical manifestations of portal hypertension are many and vary greatly from patient to patient. One of the most prominent features is the formation of collateral circulation between the portal and caval systems. Visible superficial collaterals are frequently present, usually coursing upward over the anterior abdominal wall and occasionally downward into the inferior vena cava. Many of these collaterals arise close to the umbilicus and are connected internally in some cases with the still patent umbilical vein. Occasionally, when one large vein arises close to the umbilicus, presumably from the umbilical vein, there may be a striking hum or even a thrill. This situation has become known as the Cruveilhier-Baumgarten syndrome. The two other clinically important anastomotic channels are in the hemorrhoidal area where branches of the portal vein anastomose with branches of the hemorrhoidal veins, and in the lower end of the esophagus where the portal vein makes connections with the superior vena cava. When the portal

venous pressure is high, the collateral channels of the anterior abdominal wall often become prominent, hemorrhoids may be present and venous varices at the lower end of the esophagus may form. Bleeding from these latter two sites is not unusual and may be massive and often fatal when from the esophagus. Other findings frequently associated with portal hypertension are: ascites, splenomegaly, anemia, leukopenia, and thrombocytopenia.

Portal hypertension may arise from either extrahepatic or intrahepatic disease. Extrahepatic obstruction of the portal vein, either congenital (e.g., cavernous transformation) or acquired (e.g., portal vein thrombosis), will lead to severe portal hypertension. Intrahepatic obstruction is usually due to cirrhosis of the liver although hepatic vein occlusion by tumor or thrombosis are less common causes (Chiari's syndrome). Whether obstruction to the portal blood flow alone by the fibrosed and diseased liver will lead to portal hypertension or whether other factors are needed, has yet to be decided.

Hepatic coma--When the term hepatic coma is used it generally conjures up the picture of a comatose patient with deep jaundice and other signs of liver failure and a fatal termination. This may not always be an accurate picture. It is true that liver coma usually ends fatally, particularly when it appears spontaneously, but jaundice is frequently not present nor are evidences of liver failure always noticeable if by this term is meant a progressive diminution in liver function. Liver coma seems to occur in both of the two relatively distinct kinds of patients with severe liver disease--the acute or active and the chronic or stabilized. In the acute active form of liver disease, such as acute cirrhosis, jaundice is common and evidences of progressive liver disease may be present which may terminate with a period of typical liver coma. The most severe of these is the so-called acute yellow atrophy or acute massive necrosis. Patients with chronic liver disease, many of whom are nonjaundiced, may also develop liver coma but in this case there is usually no clinical or laboratory evidence of progressive liver disease or decrease in liver function associated with the onset of coma. In the first case, the acute liver disease, the state of coma seems to supervene because of a progressive decrease in liver function. In the second circumstance no significant change in liver function can be measured and one is led to suppose rather that an excessive metabolic load has been placed upon the liver which it cannot handle.

The importance of liver coma in cirrhosis may be seen by the figures of Patek and Ratnoff who observed that 36% of their patients with cirrhosis died with hepatic coma. The classical triad observed during this stage consists of mental confusion, a characteristic tremor, and specific electroencephalographic changes. The confusion usually progresses from a simple slowness of response to questioning, to clear-cut confusion and disorientation. The tremor is "most consistently and most effectively demonstrated by having the patient hold his arms and hands outstretched with the fingers

spread apart. Depending upon the severity of the process, as this posture was maintained there appeared at regular intervals of a fraction of a second to 7 seconds, a series of movements consisting usually of lateral deviations of the fingers, flexion-extension of the fingers at the metacarpal-phalangeal joint, and flexion-extension of the wrist.... In the more severe cases, as the arms were outstretched, there was the flexion-extension movement at the elbows and the shoulders."

The signs composing this triad may appear days or sometimes weeks before coma ensues and not all patients developing one or more of these signs will progress to deep coma. The frequency with which they do, however, supports the concept that these signs herald the approach of this condition. Not always are these signs present during this early stage of hepatic coma. Mental confusion seems to appear first although a tremor will usually be present at the same time or earlier if careful examination is made. The electroencephalographic changes described by Foley, Watson, and Adams may not be present in the early stages but are almost invariably seen when impending liver coma is clear cut. These changes are described as "paroxysms of bilaterally synchronous, symmetrical, high voltage, slow waves in the delta range of 1-1/2 to 3/second." They usually appear first in the records from the frontal region and, as the coma progresses, spread laterally and posteriorly.

Patients with severe liver disease are particularly susceptible to many of the usual hypnotics, analgesics, and sedatives. Morphine and many of its derivatives appear to be inactivated by the liver and have a prolonged action in patients with a severe cirrhosis. Many barbiturates appear to be metabolized partly by the liver and paraldehyde also fits into this group. These agents may produce prolonged sleep in patients with severe cirrhosis and also appear to play a part in the genesis of hepatic coma; that is, in susceptible individuals even small amounts of morphine or paraldehyde or repeated doses of certain of the barbiturates will lead to deep sleep which may progress to irreversible coma. Whether the administration of these substances actually induces liver coma or merely accelerates a process already beginning is not known. Nevertheless, they should be administered with extreme caution. Demerol and certain of the shorter chain barbiturates (barbital and phenobarbital) which are metabolized or excreted more by the kidneys than by the liver are thought to be better tolerated in severe liver disease. Even they, however, must be used with caution and a careful watch made both before and after use for the signs of impending hepatic coma. (Am. J. Med., June 1954, C. S. Davidson, M. D.; Boston City Hospital, Boston, Mass.)

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Massive Gastrointestinal Hemorrhage

The source of the bleeding in certain patients who have experienced massive gastrointestinal hemorrhage remains obscure even after many methods of investigation have been used. In those patients in whom it is impossible to ascertain the source of the hemorrhage prior to operation, it may be difficult to determine which therapeutic procedure will afford the greatest chance of success. If exploration has been advocated and practiced, the surgeon frequently is rewarded by finding a lesion that may be incriminated and that may be removed with satisfactory results. Lesions that are not diagnosed preoperatively include diffuse gastritis with small superficial areas of erosion, esophageal and gastric varices, benign or malignant myomatous lesions of the stomach or small bowel, shallow gastric or duodenal ulcers, diffuse hemorrhagic gastroduodenitis, small, malignant, ulcerating lesions of the stomach, Meckel's diverticulum, regional enteritis, phlebectasia, hemangiomas, metastatic lesions particularly from a hypernephroma or melanoma, single or multiple carcinoids of small bowel, irradiation ulcers, adenomas of Brunner's glands, lymphoblastomas of the small bowel, or pheochromocytomas, in particular those associated with episodic hypertension in young people.

When it is impossible to determine the source of hemorrhage prior to operation and when no definite lesion can be found at the time of operation, the magnitude of the problem is compounded and the surgeon is confronted with the necessity of making a decision, even though he has only conflicting evidence to guide his thinking. The purpose of this study was to find, if possible, evidence to support a recommendation for definitive action when confronted with this set of circumstances and to eliminate the quandary in which all surgeons occasionally find themselves.

Because of the difference of opinion, reflected in the views of the authors quoted, regarding the management of patients with indeterminate gastrointestinal bleeding at the time of laparotomy, the authors reviewed the experience at the Mayo Clinic. They considered all patients who were seen in the 10-year interval 1937 through 1946, who presented a major complaint of gastrointestinal bleeding with confirmatory historical, physical, and laboratory evidence, and who underwent laparotomy during which the cause of the bleeding was not ascertained by gross inspection or palpation. Forty-eight such cases were encountered in a review of the records of all indeterminate gastrointestinal bleeders, and the records of approximately 3,500 patients who had undergone gastric resection during the 10-year period.

For the purposes of this study the 48 cases were divided into series A and series B. Series A is comprised of 28 cases in which either the abdominal exploration gave negative results, or a surgical procedure other than one on the gastrointestinal tract was performed. Series B is comprised of 20 cases in which subtotal gastric resection was performed without gross evidence of the source of the bleeding at the time of resection. Questionnaires were sent to both groups covering the patient's state of health, presence of

nausea, vomiting, or indigestion, evidence of bleeding by vomiting or by passage of tarry stools, delay in resumption of the usual occupation following operation, and subsequent medical or surgical treatment following laparotomy.

In the 28 patients in Series A who underwent exploration, but in whom no definitive operation on the gastrointestinal tract was performed, 63% experienced recurrence of massive hemorrhage within 5 years. The other 20 patients (series B) underwent partial gastrectomy after sources of hemorrhage in the bowel had been as carefully excluded as possible, and only 11% of these experienced recurrence of massive hemorrhage within 5 years. Factors relating to the number of preoperative hemorrhage episodes and the age of the patients indicated that younger persons who have experienced one or more massive gastrointestinal hemorrhages prior to operation are more likely than older persons to bleed subsequently to operation unless a partial gastrectomy is performed.

When the removed portion of stomach, and in some instances a small rim of duodenum, was examined in the surgical pathology laboratory, a definite lesion from which the hemorrhage may have originated was demonstrated in 8 of the 20 specimens. These lesions consisted of a small, active gastric ulcer in 4 specimens, a duodenal ulcer in 1, chronic gastritis with areas of mucosal ulceration and hemorrhagic areas noted by the pathologist, in 2, and a healed gastric ulcer in 1. In the remaining 12 specimens varying degrees of chronic gastritis were noted, but in none of these was it possible to incriminate a specific area as the possible site of hemorrhage.

Although this series of cases is admittedly small and therefore subject to statistical misinterpretations, it appears reasonable to conclude that when the surgeon is unable to determine the source of massive gastrointestinal hemorrhage at the time of operation, he is justified in performing a partial gastrectomy, but only after meticulous search of the stomach, duodenum, small bowel, and large bowel has been unrewarding. (Ann. Surg., June 1954, H. K. Gray, M. D., W. C. Shands, M. D., and C. Thuringer, M. D.; The Mayo Clinic, Rochester, Minn.)

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Kerosene Poisoning in Young Children

Kerosene is a derivative of petroleum which includes fractions of relatively low volatility obtained from distillation at temperatures between 200 and 300° C. The purity of the product varies considerably, depending largely upon the point of fractionation and resulting inorganic material.

The incidence of poisoning from kerosene is far higher, and the complications are more serious than is generally realized. This study was made in an area with a population of about 75,000 where kerosene is used

extensively for heating and cooking. Over a 9-year period, between 1944 and 1953, 101 children between the ages of 8 months and 2 years were admitted to 5 hospitals in northwestern Vermont following the ingestion of kerosene. From information received from physicians, it is estimated that between 30 and 40 additional cases were seen in homes or offices but were not hospitalized. Of the patients referred to the hospitals for care, many showed toxic reactions of varying severity, and 2 died.

The cases studied in the 3 Burlington hospitals comprised 2.1% of all admissions of children under the age of 2 years and 40% of total admissions of children under 2 years because of general household accidents, barring fractures, bruises, and lacerations, but including poisonings, burns, and foreign bodies. While kerosene poisoning was not a definitely seasonal type of accident, the highest incidence was observed during the spring.

In reviewing the histories of these cases, particularly with regard to the manner in which the kerosene was obtained, many examples of gross carelessness came to light. One child was said to have sniffed kerosene from a 30-gallon drum from which the top was missing; another drank from a coffee can which was used to catch drippings from a leaky fuel line connected with an oil stove; another drank from a can in the woodshed which contained kerosene used for soaking paint brushes; and still another from a cup left on the kitchen table. In 1 case the kerosene was sucked from an open vent pipe of an oil stove, and in another it was taken from a soda bottle which had been left on the kitchen floor. Another child alternately dipped his fingers in a feeder of an oil stove and sucked the kerosene from them for about half an hour, while still another drank from a can of kerosene which was kept on a window sill near the kitchen stove to be used for starting wood fires. From these examples and many others of similar nature, it seems clear that in most instances the children obtained the kerosene because of negligence or ignorance of danger on the part of the parents.

In many instances, the child was found lying beside the container or other source of kerosene, coughing and choking and with an odor of kerosene on the breath. Many became drowsy and stuporous within about an hour. Six were unconscious when found; all of these ran a toxic course with symptoms of pulmonary damage. Fifty-two percent of the children vomited either before or soon after arrival at the hospital, 46% were dyspneic, and 24% showed evidence of cyanosis on arrival or within the first 6 to 8 hours after admission. The pulse rate ranged from 80 to 160 per minute, rapid rates being noted in more than half of the patients. Ninety-two percent had temperature elevations within 4 to 6 hours following ingestion or inhalation of the kerosene, the higher temperatures being noted in the cases in which hospitalization was delayed. In most cases there was a gradual return to normal after about 48 hours. In several of the more severe cases, the temperature remained high for as long as 8 days.

Practically all of these children were treated by gastric lavage, with plain water or sodium bicarbonate in weak solution. Some of them vomited during this procedure. Almost all were placed in oxygen tents for 12 to 24 hours or until dyspnea and cyanosis had disappeared. Most were given penicillin throughout their hospital stay and were later followed at home by the family physician, with the recommendation that the drug be continued for several days.

It seems probable that, in order to produce dangerous toxic and depressing effects upon the central nervous system, amounts of kerosene in excess of that usually ingested by young children must be taken, or there must be mixed with it other toxic agents which are more readily absorbed from the gastrointestinal tract than components of ordinary varieties of kerosene itself. This casts some doubt upon the desirability of performing gastric lavage in the average case, because of the grave danger of aspiration in the course of treatment.

If it is believed that gastric lavage is indicated in an individual case, it is the authors' impression that it should probably be done only after introduction of an intratracheal tube with balloon inflated to isolate completely the respiratory tract distal to the balloon. With such a tube in place, it is possible to irrigate the bronchial tree gently with small amounts of normal saline and also to give thorough gastric lavage without danger of aspiration. Oxygen therapy and penicillin and other antibiotics to control secondary infection are of proved benefit. Prophylactic measures aimed toward education of the public regarding the dangers of kerosene poisoning are of the utmost importance. (Radiology, June 1954, J.C. Foley, M.D., N.B. Dreyer, M.C.R.S., A.B. Soule, Jr., M.D., and E. Woll, M.D.; University of Vermont College of Medicine, Burlington, Vt.)

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Death due to Accidental Poisoning

A recent report in the British literature on substances responsible for accidental poisoning in young children prompted a review of the situation in the United States.

During the decade 1940 to 1950 in England and Wales, 218 children 1 to 5 years of age died of accidental poisoning. On the logical assumption that the United States rate was approximately the same as the British, Veeder, commenting editorially on Swinscow's article, estimated the number of deaths in the United States for the decade at 900. It was surprising, therefore, to find that instead of the expected 900 deaths from this cause there were more than 3,600.

The British rate for the period was 0.87 per 100,000 population. The United States rate was 3.6 per 100,000, more than four times as high. In the early years of the decade the contrast was even greater. Since 1945 the

British rate has increased somewhat, while the United States rate has shown a slight decline. An even greater discrepancy between the rates for the two countries exists in the group under 1 year of age, the British rate being 0.29 per 100,000, in contrast to a United States rate of 1.8. The higher United States rate for this particular cause not only holds throughout childhood but is found at all age levels.

The reasons behind the high United States rates for accidental poisoning are not entirely clear. A United States death rate from a specific cause four times that of a country with generally comparable over-all rates needs careful scrutiny. Easy access to poisonous substances is probably the basic reason. Our relatively high living standards make it possible for most family medicine cabinets to contain old prescriptions and over-the-counter medicines to which young children have easy access.

In 1951 the American people spent about three-quarters of a billion dollars on prescriptions and almost one billion on packaged medication, of which 135 million went for aspirin and analgesics. The relationship of medicines in the home to income seems to be reflected in the higher rate for drug poisonings among white than among nonwhite children--0.9 as compared with 0.6. Craig and Fraser in England have some evidence that medicinal poisonings increased at the time of the introduction of the National Health Service which increased the rate of prescribing.

On the other hand, many of the poisonings from material for external use probably have the related cause of poor housing and low income. Non-white rates from this cause are four times the white rates, 2.8 as compared with 0.7. Lye, kerosene, and rat poison are more commonly found in low-income homes. Lead poisoning has been definitely associated with poor housing.

Roughly two-thirds of the deaths from accidental poisoning could be wiped out if aspirin, the barbiturates, kerosene, lye, lead, and arsenic were unavailable to small children. The physician's responsibility, especially in relation to drugs, is clear. It is probable that many physicians are on the alert to warn mothers about the dangers of rat poison or the new insecticides but are unaware of the danger of the aspirin bottle left carelessly lying around.

For each child dying of accidental poisoning there are many who are poisoned but recover. Poisoning, unlike many other types of accidents, does not produce a large number of cripples, except in the case of two substances, lye and lead. Esophageal stricture due to lye ingestion is a very common condition in the South, and lead encephalitis is well known in centers alerted and equipped to look for it.

Not all the drug deaths are due to accidental ingestion by an unsupervised child. Some, especially under the age of 1 year, must be due to wrong dosage. More information on the circumstances surrounding the accident is needed to point up precautionary measures. Each state might well have a

committee of pediatricians who obtain data on each poisoning death and determine responsibility, as an educational and not punitive measure, as has been done so successfully for maternal deaths.

The lack of sufficient data for classification on 40 deaths in the 2-year period points to the need for education of physicians as well as the public in this problem. It is perhaps fair to assume that the quality of care rendered the poisoning victim by a physician who gives as the cause of death "pill," "tablet," "poison," or "dose of medicine" is not the highest. Or perhaps he is unaware of the value of obtaining an autopsy on an obscure case so that the accurate diagnosis can be used as a tool for prevention of a similar accident. (J. Pediat., June 1954, K. Bain, M.D.; Children's Bureau, Department of Health, Education, and Welfare, Washington 25, D.C.)

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Localized Organizing Pneumonia

Organizing pneumonia as a localized process has been seen by the authors as a surgical problem in 15 instances. This poorly defined entity has been mistaken clinically, roentgenographically, and usually at exploratory thoracotomy for carcinoma of the lung. As a surgical problem, with a few exceptions, this process has been neglected. Recognition is imperative because conservative rather than radical surgical measures are indicated and in the reported cases a lobectomy rather than a pneumonectomy was possible in most instances. The authors are well aware that so-called "virus pneumonia", often represented by changing roentgenographic shadows, is frequently treated as a nonmalignant process only to find later that the roentgenographic signs were related to variable degrees of bronchial block by a carcinoma. For that reason, the authors do not advocate delay in the prompt exploration of localized pulmonary lesions of doubtful etiology. This lesion is relatively rare for, during the time period in which these cases were collected, more than ten times as many carcinomas of the lung were explored surgically.

The clinical findings in this group of cases strongly suggest the diagnosis of bronchogenic carcinoma. Thirteen patients were male and 2 were female. Fourteen of the patients were over 40 years of age and 11 were heavy smokers. The clinical symptoms were those of a chronic pulmonary disease. The most important single clinical finding in the background was a history suggesting the presence of lobar pneumonia in 10 instances. These patients had a rather typical onset with chills, fever, and cough. There were signs of incomplete improvement following the administration of various antibiotics. These episodes at times were repeated. In 7 patients hemoptysis occurred and it was not infrequent for it to be repeated. Chronic cough, chest pain, and shortness of breath were almost uniform. All these patients appeared chronically ill and weight loss was often a prominent fea-

ture. In 9 cases this amounted to a loss of 10 or more pounds. On the basis of this clinical history, the most logical diagnosis in this group of cases seemed to be bronchogenic carcinoma.

The initial roentgenographic examinations were thought to be diagnostic of bronchogenic carcinoma in 10 out of the 15 cases reported. In 3 additional instances, bronchogenic carcinoma was considered as the second most likely diagnosis and could not be excluded. The 2 remaining cases were diagnosed as interlobar effusion and metastatic carcinoma.

These 15 cases of organizing pneumonia demonstrate that this entity is extremely difficult, if not impossible, to differentiate from bronchogenic carcinoma. The diagnosis might become obvious both clinically and roentgenographically if sufficient time were allowed to elapse. This procedure, however, does not seem justifiable in the consideration of an individual case because undue delay may cause great harm if the lesion should prove to be malignant. It would appear, however, that more adequate roentgenological examinations, including the use of laminography might indicate the correct diagnosis in a significant percentage of cases. The demonstration of patent bronchi, calcification within the mass, involvement of multiple segments, and extension to pleural surfaces are the roentgenological criteria favoring benignity. The roentgenographic suggestion that the process might be inflammatory may aid the pathologist and the thoracic surgeon at the time of surgery. In view of the pathologic changes found in these cases, it seems unlikely that this process could ever fully resolve. The fibrous and chronic inflammation present results in chronic sepsis which accounts for the weight loss and the chronic illness which these patients have demonstrated. The authors have found, in contradiction to Freedlander and Wolpaw, that frozen section is diagnostic. Previous cases have been treated by immediate pneumonectomy, because the diagnosis of carcinoma appeared certain. With frozen section, lobectomy rather than pneumonectomy can be done. Such a procedure conserves pulmonary parenchyma and because many of the individuals in this group are over the age of 40 this may reduce early and later respiratory insufficiency. (Am. J. Roentgenol., June 1954, L. V. Ackerman, M.D., G. V. Elliott, M.D., and M. Alanis, M.D.; Washington University School of Medicine, St. Louis, Mo.)

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Orbital and Transorbital Stab Wounds

It is not rare for orbital stab wounds to become fatal if no specific intervention is made. This is due to the common occurrence of additional transorbital complications.

It is characteristic of these lesions that the external wound is small and that the track of the stabbing instrument is long and narrow, with an irregular course, due to transient displacement of the tissue at the moment

of injury. The more common complications are hemorrhage and infection. Stab wounds may readily result in an external closure of the wound and retention of secretion, so that favorable conditions may develop for the growth of anaerobic bacteria, such as Clostridium tetani.

Owing to the close proximity of the paranasal air sinuses, which are separated from the orbit only by the thin lamina papyracea, infection from the nose may occur if the lamina is damaged.

The various types of infection which may occur are collateral edema or phlegmon of the orbit, meningitis, meningoencephalitis, intraorbital or intracranial abscess, and generalized infection, such as tetanus.

According to their manner of production, two types of orbital stab wounds may be distinguished.

1. Stab wounds produced by blunt objects, such as cow's horn, penetrating the orbit and, possibly, lacerating the eyelid. Owing to the bluntness of the stabbing object, a strong pressure is exerted on the eyeball, resulting in contusion, which may be associated with intrabulbar hematoma, rupture of the sclera, avulsion of the ciliary attachment of the iris, or luxation of the lens.

2. Stab wounds proper, produced by long, slender, pointed objects (pitchforks, twigs, pencils, et cetera), which may impinge on, but do not damage, the eyeball because it is pushed aside in the compressible fatty tissue of the orbit at the moment of injury. If the direction of the impact is from below upward, as is commonly the case because of the unconscious throwing back of the head at the time of injury, the stabbing instrument may pass through the orbital cavity, fracture its roof, and lacerate the frontal lobe. In this case, injury to the orbital contents need only be minimal and, as compared with the cerebral complications, is usually negligible.

This article is concerned with the second type only, i. e., orbital stab wounds proper. In these, the entrance wound is usually inconspicuous; local symptoms may be mild, with no, or only transient, visual disturbances, but with the possibility of intracranial complications, which may at first be masked by the ocular symptoms.

Fifteen cases of orbital stab wounds, including 7 in children, were analyzed. In 7 cases the lesion was caused by a pitchfork, while in the remaining 8 it was due to twigs, a keyhole saw, an iron bar, and a scythe point. Intracranial complications occurred in 9 cases, and tetanus and gas gangrene each developed in 1 case, in which splinters of wood were retained in the orbit. The patient with tetanus and 2 of those with intracranial complications died. The eyeball was not injured in any of the cases, but enucleation was performed in 1 case, because of retrobulbar gas gangrene and monstrous protrusion. The symptoms, differential diagnosis, and treatment are discussed. At the follow-up examination, all the patients had regained full working capacity, but 4 had various permanent cerebral symptoms, such as general mental blunting, slight aphasia, slight loss of motor power, and convulsive seizures.

Ophthalmoscopic conditions, visual acuity, and field of vision were normal in all but 2 cases; in 1 of these, a direct lesion of the optic nerve had occurred, and in the second enucleation had been performed. It is emphasized that local symptoms may be slight in orbital stab wounds and that the injury should never be regarded as an isolated ocular lesion, even if cerebral symptoms are absent immediately after the trauma. (Arch. Ophthalmol., June 1954, P. Kjer, M.D.; Aarhus Municipal Hospital, Aarhus, Denmark)

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Navy Hospital Ships

From the time of the first naval hospital ship, the "Red Rover," which operated on the Mississippi River during the Civil War, the Navy's floating hospitals have played an increasingly important role in the care of the sick and injured, especially in time of war. During the Korean conflict naval hospital ships assumed a new role insofar as land warfare was concerned. With the mounting of helicopter flight decks, the hospital ships were able to function as the equivalent of front-line hospitals. In Korean waters the hospital ships operated, in many instances, almost within sight of the front lines. To the wounded this meant that a modern hospital with its specialized care and with the finest equipment was only minutes away. The promptness with which definitive treatment was made available to battle casualties resulted in a tremendous saving of life and limb during the Korean action.

At the outbreak of hostilities in Korea only one hospital ship--the U. S. S. Consolation--was in commission. She was immediately dispatched to Korean waters and her beds were soon filled to overflowing. Two additional hospital ships--the U. S. S. Repose and the U. S. S. Haven--were reactivated during the third quarter of 1950 and soon joined the Consolation in the Far East.

During the early part of the conflict patients often fared poorly on the trip out to the hospital ship, usually in open boats; and in bad weather evacuation of patients to the hospital ships was almost impossible. To overcome these difficulties the Consolation was sent back to the United States in 1951 and fitted with a 60-foot flight deck. Returning to the scene of action, the Consolation received her first patient by helicopter about the middle of December 1951. Therefore she became the first hospital ship to receive a battle casualty directly from the battlefield via the ambulance of the air--the helicopter. Both the Repose and the Haven subsequently returned home for the installation of flight decks.

During the period 1950 through 1953 naval hospital ships cared for almost 55,000 patients. In addition to approximately 32,000 Navy and Marine Corps personnel, large numbers of Army and Air Force patients as well as many allied military personnel were treated aboard Navy hospital ships. In

fact, for the 4 years as a whole (1950-1953) one-third (over 18,000) of the patients were members of the other two branches of the U.S. Armed Forces. Most of these were Army personnel. Almost 5,000 other patients, primarily allied military personnel, were also cared for aboard the three hospital ships.

There were over 19,300 battle casualties cared for on naval hospital ships during the Korean action. More than 10,000 of these were Navy and Marine Corps personnel, and about 7,700 were members of the Army and Air Force. The balance of approximately 1,600 were mainly allied military personnel. The total number of battle casualties constituted about 37% of all the admissions during the same period. This percentage varied somewhat for the different groups of patients, Army and Air Force casualties comprising a larger proportion (43%) of the total number of admissions for their group than did the other two categories of patients (34% each).

The length of stay of patients on hospital ships was influenced by several factors. One of these was the diversified operations of the hospital ships themselves. They functioned as base hospitals during several of the Korean engagements, supported the landing of the First Marine Division at Inchon and at times acted as evacuation ships transporting patients to other medical treatment facilities. Generally, patients requiring long periods of treatment or convalescence were transferred to land-based hospitals while those whose prognosis indicated an early return to duty received all of their care on the hospital ships. During the period under discussion almost half of the patients admitted to the hospital ships were returned to duty while most of the remainder were transferred to other medical facilities. On the average, the length of stay on hospital ships varied between 1 and 2 weeks.

In addition to the 3 hospital ships of the United States Navy, the Danish hospital ship--the Jutlandia--also performed valiantly in Far Eastern waters. During the campaign she cared for thousands of United Nations troops wounded on the battlefields of Korea. In the early months of the Korean action the British hospital ship--HMS Maine--also was stationed in the Far East. She was used mainly as an evacuation ship to transport casualties to Japan. (Statistics of Navy Medicine, June 1954; Bureau of Medicine and Surgery, Department of the Navy, Washington 25, D.C.)

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The printing of this publication has been approved by the Director of the Bureau of the Budget, June 23, 1952.

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From the Note Book

1. Rear Admiral B. W. Hogan (MC) USN, Deputy Surgeon General and Navy Member of the House of Delegates of the American Medical Association, attended the 1954 Annual Session of the House of Delegates held in San Francisco, Calif., 21-23 June 1954. Admiral Hogan also participated, as a member, in the meeting of the Joint Committee on Medical Education in Times of National Emergency. (TIO, BuMed)
2. An Honorary Doctor of Science Degree has been conferred upon Captain C. W. Shilling (MC) USN, Senior Medical Officer of the U. S. Naval Academy, Annapolis, Md., by Taylor University of Upland, Ind. The honorary degree was presented at the University's annual commencement exercises 8 June. Captain Shilling, a native of Upland, received his Bachelor of Science Degree from Taylor in 1923 and a Doctor of Medicine Degree from the University of Michigan Medical School in 1927. In making the presentation of the Doctor of Science Degree, Dean Rediger of Taylor University said, "It is because of his scientific contributions to the field of military medicine that Taylor University confers this degree on Dr. Shilling." (PIO, SRNC)
3. Doctor H. T. Karsner, Medical Research Advisor to the Surgeon General of the Navy, attended the Annual Meeting of the American Medical Association and the Section on Military Medicine. (TIO, BuMed)
4. Commander J. Siegel (MSC) USNR, represented the Bureau of Medicine and Surgery at a meeting of the Commission on Accidental Trauma of the Armed Forces Epidemiological Board held at the University of Colorado Medical Center, Denver, Colo., 25 June 1954. (TIO, BuMed)
5. Rear Admiral C. V. Rault (DC) USN Ret., Dean of the School of Dentistry, Georgetown University, Washington, D. C., addressed the graduating class of the General Postgraduate Course, Naval Dental School, NNMC, Bethesda, Md., on 25 June 1954. (TIO, BuMed)
6. The "U. S. Naval Dental Corps Casualty Treatment Training Program", a Bureau of Medicine and Surgery scientific exhibit is scheduled for display at the Annual Meeting of the West Virginia State Dental Society to be held at White Sulphur Springs, W. Va., 25-28 July 1954. (TIO, BuMed)
7. It has been estimated that by the end of this year the country should have more than 47 million households--totaling 163.5 million people. Another gain has been a rise in the life span of people to 69 years of age. The population has been increasing at the rate of 2.7 million a year, and 1954 should see an addition of 4 million babies. (Everybody's Business, June 1954, I. C. S.)

8. The National Institutes of Health has received as a gift the most powerful electron accelerator of its kind. Donated by the Liggett and Myers Tobacco Co., the machine is a 3-million-volt Van de Graaff generator constructed in 1950 by the High Voltage Engineering Corporation of Cambridge, Mass., for an experimental program of the tobacco company. It produces high-voltage electron energy 25 times more powerful than that from any other commercially available electron generator. (P. H. S., Dept. of H. E. W.)

9. A hydraulic-turbine dental handpiece which attains a speed of 61,000 revolutions per minute has been developed at the National Bureau of Standards. At this speed, very low cutting pressure is required and dental enamel can be cut rapidly with a minimum of vibration and heating. The hydraulic handpiece was designed and constructed by Dr. R. J. Nelsen, of the American Dental Association Research Fellowship at the Bureau, and C. E. Pelande, and J. W. Kumpula of the NBS staff. The project was part of a program of dental research which NBS is conducting in cooperation with the American Dental Association and the dental services of the Army, Navy, Air Force, and the Veterans Administration. (NBS Summary Technical Report 1868)

10. The reports of histopathological changes in the brain in schizophrenia are reviewed, described, and examined in terms of their experimental and statistical validity in the Archives of Neurology and Psychiatry for May 1954 by M. R. Weinstein, A. B.

11. It is known that Brucella invades the bone marrow and produces granulomatous lesions. A study was undertaken to determine the incidence of granulomatous lesions in the marrow, to describe the lesions, and to compare the usefulness of bacteriologic cultures of marrow and venous blood. (Am. J. Clin. Path., May 1954, LT P. K. Hamilton (MC) USN)

12. The opportunities for ozone exposure are increasing due to increasing use of electrically powered equipment and increasing applications in the chemical industry, in treating industrial wastes and in preserving perishable foods. (Indust. Hyg. & Occupational Med., May 1954, H. E. Stokinger, Ph. D.)

13. A rapid ambulatory method of local treatment using enzymes and antibiotics to debride, to combat cellulitis, to improve local circulation, and to promote epithelialization in chronic ulcers is presented as an adjuvant to surgery and other general measures which reduce stasis. (Surg., Gynec. & Obst., June 1954, I. R. Spier, M. D. and E. E. Clifton, M. D.)

14. Seven case reports of children with intervertebral disk calcification are presented and compared with 8 reports available from the literature. (Radiology, June 1954, F.N. Silverman)
15. A review of the symptoms, roentgenograms, pathology, and surgical treatment of tumors of the small intestine is presented in the American Journal of Surgery for June 1954 by L. H. Pollock, M.D.
16. Data concerning the growth of 229 children with certain congenital heart lesions are reviewed. The lesions studied were patent ductus arteriosus, tetralogy of Fallot, interatrial septal defect, coarctation of the aorta, and pulmonary stenosis without cyanosis. (J. Pediat., June 1954, F.H. Adams, M.D., G.W. Lund, M.D., and R.B. Disenhouse, M.D.)
17. Diagnostic paracentesis is of great value: in the preoperative evaluation of blunt abdominal injuries; in the differentiation of the various types of peritonitis; and in the diagnosis of many of the various abdominal catastrophes. (Surg., June 1954, C.T. Thompson, M.D. and D.R. Brown, M.D.)
18. Late results in 243 arthroplasties with an acrylic prosthesis for traumatic or osteo-arthritic conditions are reported in the Journal of Bone and Joint Surgery for June 1954 by R.M. d'Aubigné and M. Postel, Paris)
19. The clinical manifestations of 430 cases of essential polyangiitis (200 cases reviewed in the English literature since 1941 and 230 cases taken from the files of AFIP) are presented in Annals of Internal Medicine for June 1954 by Col. F.H. Mowrey, MC, USA and E.A. Lundberg, M.D.
20. The physician in industry has an opportunity to influence favorably the increase in lung cancer deaths by: optimal use of contacts with "well" employees to detect the earliest possible evidences of lung cancer; critical collection and study of morbidity and mortality data with specific attention to job assignments and possible environmental hazards; recognition and elimination of real or potential environmental hazards. (Indust. Med. & Surg., June 1954, L. Wade, M.D.)
21. A combined electrolyte approach to the problem of uremia and acidosis consisting of the administration of hypertonic sodium lactate, calcium salts, and occasionally potassium salts is presented in the American Journal of the Medical Sciences for June 1954 by R.A. Neubauer, M.D. and E. Garrigues, B.A.)
22. Seventy percent of cases of chronic scarring acne vulgaris, refractory to other forms of therapy, responded to topically applied natural estrogens. (Postgraduate Medicine, June 1954, I. Shapiro, M.D.)

Dental Service Report DD Form 477

The Dental Service Report, DD Form 477, revised 1 October 1953, and effective since 1 January 1954, has now had a 6-month trial period. Reports indicate that the form has been well received in the field and considered an improvement over the old and more complex DD Form 477. The simplicity of the new form has resulted in a decrease in errors which is most gratifying to all concerned. Inasmuch as 6 months appears to be a reasonable period of time in which to judge the form, it also appears to be an appropriate time to list a few errors which are most frequently made. Such errors are as follows:

1. Figures entered in wrong line or column.
2. Line left blank where a figure is obviously required.
3. Numbers in parentheses included in the total number of procedures.
4. Figures for entries "written in" not put in parentheses.

Inasmuch as the above errors may be attributed primarily to human inconsistencies, it is suggested that any officer who may sign Dental Service Reports review them carefully before signing and at times refresh his memory regarding BuMed Instruction 6600.1. (DentDiv, BuMed)

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Procurement of U. S. Naval Dental Corps Training Films

U. S. Naval Dental Corps training films are available on a short-term loan basis to all naval activities. Such films may be procured by submitting an official request to appropriate Naval District Headquarters or River Naval Commands. (DentDiv, BuMed)

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Emergency Medical Treatment Manual

NavMed P-5022, Emergency Medical Treatment Manual, is being distributed to all activities having Medical Department personnel attached. This manual summarizes treatment recommended for large numbers of casualties in disasters, such as atomic bombing, intense high-explosive or incendiary bombing, et cetera.

Requests for additional copies should be submitted on Form NavExos 158, Stock Forms and Publications Requisition, to the local District Publications and Printing Office. Copies for personal use may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., price 25¢, being identified as United States Civil Defense, "Emergency Medical Treatment," Federal Civil Defense Administration TM-11-8. (Spec WeaponsDefDiv, BuMed)

Recent Research ReportsNaval Medical Research Institute, NNMC, Bethesda, Md.

1. Nature of the Acetyl Cholinesterase Surface. II. The Ring Effect in Enzymatic Inhibitors of the Substituted Ethylene Diamine Type. NM 000 018. 06.33, 2 Feb 1954.
2. Differential Response of Blood Glutathione and Sulfhydryl, Associated With Methemoglobin Formation Due to Nitrite and Para-Aminopropiophenone. NM 007 081. 11.06, 24 Feb 1954.
3. The McMillan-Mayer Theory of Solutions. Lecture and Review Series No. 54-2, 3 Jan 1954.
4. Some Energetic Consequences of the ATP-Glutamine Equilibrium. Memo Report 54-2, related to NM 000 018.04, 10 Mar 1954.

U. S. Naval Medical Research Unit No. 3, Cairo, Egypt

1. A Comparative Study of Fumagillin and Oxytetracycline in Amebiasis. NM 007 082. 16.03, 1954.
2. The Health of United States Personnel Living in Cairo, Egypt. NM 005 050.39.33, 1954.
3. Susceptibility Studies in Schistosomiasis: III. Susceptibility of Laboratory Animals to Infection by Schistosoma haematobium in Egypt. NM 005 050.24.04, 1954.
4. Notes on African Haemaphysalis Ticks. I. The Ground-Squirrel Parasites, H. calcarata Neumann, 1902, and H. houyi Nuttall and Warburton 1915 (Ixodoidea, Ixodidae). NM 005 050.29.08, 1954.

U. S. Naval Medical Research Unit No. 4, Great Lakes, Ill.

1. Attempts to Produce Rheumatic Fever in Rabbits by Means of Prolonged and Intensive Streptococcus Infection. NM 005 051.03.07, 15 Apr 1954.
2. A Common Infectious Disease of Laboratory Rabbits Questionably Attributed to Encephalitozoon Cuniculi. NM 005 051.03.08, 1 Mar 1954.
3. The Control of Acute Respiratory Diseases in Navy Recruits. III. Pilot Study Using a New Disinfectant for Elimination of Environmental Reservoirs. NM 005 051.05.03, 1 Feb 1954.
4. Treatment of Acute Respiratory Infections With Erythromycin: Controlled Studies on the Efficacy of Erythromycin in Miscellaneous Acute Respiratory Infections, NM 005 051.17.01, 25 Mar 1954; Effect of Duration of Therapy of Streptococcal Infections on Eradication of Streptococci and on Formation of Antistreptolysin O, NM 005 051.17.02, 25 Mar 1954.
5. Controlled Studies on the Comparative Efficacy of Erythromycin and Penicillin in the Treatment of Scarlet Fever. NM 005 051.19.01, 1 Mar 1954.

Naval Medical Field Research Laboratory, Camp Lejeune, N. C.

1. Addendum to: Studies on the Effect of Insecticides on the Oviposition of Anopheles quadrimaculatus Say. NM 005 052.23.04, Apr 1954.
2. The Kuder Preference Record--Personal and Its Use in Psychiatric Screening. NM 005 052.33.02, June 1954.
3. An Analysis of Automobile Accidents Involving Military Personnel. NM 005 052.33.01, June 1954.
4. Effect of a Bacterium on the Larvae of Anopheles quadrimaculatus Say. NM 005 052.02.08, June 1954.

Medical Research Laboratory, Submarine Base, New London, Conn.

1. Revisions of the Navy Sonar Pitch-Memory Test. NM 003 041.55.01, 20 Apr 1954.
2. Evaluation of the Attenuation Characteristics of One Type of Earmuff-Helmet Combination. NM 003 041.56.04, 5 May 1954, Memo Report 54-7.
3. The Influence of Practice and Pitch-Distance Between Tones on the Absolute Identification of Pitch. NM 003 041.22.05, 24 June 1952.
4. The Effect of Refractive Error on Acuity Through Binoculars. NM 003 041.57.01, 2 Apr 1954.
5. A Study of the Thematic Apperception Test Stories and Sentence Completions of Subjects in Operation Hideout. NM 002 015.11.02, 4 Feb 1954.
6. Report on General Purpose Sunglasses Submitted by Ship's Store Office. Memo Report 54-3, NM 002 014.08.04, 2 Apr 1954.
7. Comparative Analysis of Normal Speech and Speech With Delayed Side-Tones by Means of Sound Spectrograms. NM 003 041.56.03, 27 Apr 1954.
8. Effect of Various Durations of Red Adaptation on the Course of Subsequent Dark Adaptation. NM 003 041.58.01, 27 Apr 1954.

U. S. Naval Air Development Center, Johnsville, Pa.

1. Measurement of Some Thermal Properties of Human Tissues. NM 001 090.04.01, 7 Apr 1954.
2. Some Effects of Cyclic Acceleration in Rhesus Monkeys. NM 001 060.10.05, 4 May 1954.

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BUMED INSTRUCTION 4210.1B

8 June 1954

From: Chief, Bureau of Medicine and Surgery

To: Stations Having Medical/Dental Personnel Regularly Assigned

Subj: Purchase requisitions under appropriation, Medical Care, Navy

Ref: (a) Chap. 24, ManMedDept
(b) Volume 2, BuSandAMan
(c) BuMed Inst. 1770.8
(d) BuMed Inst. 4440.1
(e) BuMed Inst. 5217.1
(f) BuMed Inst. 7300.1
(g) BuMed Inst. 10490.1
(h) SecNav Inst. 11101.4
(i) BuDocks Inst. 11101.21
(j) BuSandA Inst. 4210.66A

This instruction revises and reissues instructions on preparation and submission of purchase requisitions under the appropriation, Medical Care, Navy. BuMed Inst. 4210.1A of 21 Apr 1953 is cancelled.

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BUMED INSTRUCTION 7404.1

8 June 1954

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Medical/Dental Personnel Regularly Assigned
Subj: Conversion of medical and dental material to Federal Catalog numbering system; stock control and accounting procedures for
Ref: (a) BuMed Notice 4410 of 16 Mar 1954
(b) ONM Inst 4410.24 of 6 Mar 1954
(c) BuMed Inst. 4220.2 of 2 Feb 1953
Encl: (1) Accounting Procedure for Converting Medical and Dental Material to the Federal Catalog Numbering System
(2) List of Federal Catalog Groups and Classes Containing Medical and Dental Items Presently Carried in Armed Services Medical Stock List
(3) Functional Chart of Stores Accounting
(4) Conversion Work Sheet

This instruction establishes a uniform stock control and accounting procedure to effect conversion of material under the cognizance of this Bureau to the new Federal Catalog numbering system as directed in references (a) and (b). Reference (c) is currently under revision and the superseding instruction will govern requisitioning procedures. In general the arrangement of accounting and stock control records set forth in enclosure (1) coincide closely with, and will facilitate the submission of, requisitions in the method to be prescribed.

BUMED INSTRUCTION 6700.8

10 June 1954

From: Chief, Bureau of Medicine and Surgery
To: All Ships Having Medical Officers Regularly Assigned
(Including MSTs)
Subj: Passive defense; material requirements for
Ref: (a) BuMed Inst. 7303.4A
Encl: (1) List of Material Required for a Biological Warfare Sampling
Kit (Ship)

This instruction provides information regarding the addition of material to the initial outfitting list of selected vessels which will permit the assembly, when required, of a Biological Warfare Sampling Kit (Ship), and establishes a means by which materials are to be procured.

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BUMED NOTICE 12250

11 June 1954

From: Chief, Bureau of Medicine and Surgery
To: Activities Under the Management Control of BuMed
Subj: Ungraded (non-IVb) positions; report on maintenance review of
Ref: (a) NCPI 250.3-5
(b) Section 1310 of Public Law 253 (Whitten Amendment)
(c) BuMed Inst. 12250.1 of 2 Feb 1953

This notice desires a report on the results achieved under the regular maintenance review of ungraded (non-IVb) positions.

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BUMED NOTICE 6320

14 June 1954

From: Chief, Bureau of Medicine and Surgery
To: All Naval Hospitals Except Bethesda
Subj: Hospital Staffing Report (Report Symbol MED 6320-6)
Ref: (a) Hospital Staffing Report, NavMed-1353
(b) BuMed Inst. 6320.15

This notice informs addressees that corrected forms, Hospital Staffing Report, NavMed-1353, are being forwarded, and advises activities regarding procedure.

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BUMED NOTICE 7302

14 June 1954

From: Chief, Bureau of Medicine and Surgery
To: All Activities under Management Control of BuMed
Subj: Validity of Unliquidated Obligations of Record as of 30 June 1954;
Confirmation and Audit
Ref: (a) NavComp Manual, Para 022072.6.b

This notice promulgates instructions to all activities under the Management Control of the Bureau of Medicine and Surgery in order for the Bureau to comply with the requirements of the Comptroller of the Navy in regard to making confirmation and audit as to the validity of unliquidated obligations of record as of 30 June 1954.

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BUMED INSTRUCTION 6200.7

15 June 1954

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations
Subj: Heat Casualties; prevention of
Encl: (1) Guide to Aid in Prevention of Heat Casualties

This instruction provides information and guidance for the prevention of heat casualties.

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BUMED NOTICE 6470

15 June 1954

From: Chief, Bureau of Medicine and Surgery
To: Activities utilizing the Photodosimetry Program
Subj: Photodosimetry Program; semiannual calibration curve for

Ref: (a) NavMed P-5005, "Photodosimetry Manual"
 (b) BuMed ltr BuMed-74-bmb, M8-1/NN, Ser 5201 dtd 25 June 1952
 (c) BuMed Notice 6470 of 16 January 1953

This notice advises activities utilizing the Photodosimetry Program that, since calibration measurements on DF-7 photodosimetry film, emulsion No. 535, are similar to the present No. 498 curves, copy of which was distributed by reference (c), all naval activities concerned are authorized to continue the use of No. 498 curves with either No. 498 or No. 535 film.

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BUMED INSTRUCTION 6730.2

16 June 1954

From: Chief, Bureau of Medicine and Surgery
 To: Ships and Stations Having Medical Personnel Regularly Assigned

Subj: The Farnsworth Lantern; adoption of as an official U. S. Navy color vision test lantern

Ref: (a) Art. 15-11(4), ManMedDept
 (b) Art. 15-29(2) (c), ManMedDept
 (c) Art. 15-30(1) (e), ManMedDept
 (d) Art. 15-45(5) (b), ManMedDept
 (e) Art. 15-62(19), ManMedDept
 (f) Art. 15-67(1) (e), ManMedDept

Encl: (1) Detailed Instructions for the Administration of the Color Vision Test With the Farnsworth Lantern

This instruction announces the adoption of the Farnsworth Lantern as a replacement item for the Edridge-Green Lamp and the Williams Lantern; its use as a final validating test for color vision in the naval service; and its adoption as the test standard for admission to certain specialized programs.

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BUMED INSTRUCTION 6620.3

17 June 1954

From: Chief, Bureau of Medicine and Surgery
 To: Ships and Stations Having Dental Corps Personnel Regularly Assigned

Subj: Use and disposition of NavMed-1299, Dental Examination and Treatment Record

Ref: (a) Art. 6-116, ManMedDept
(b) Art. 23-303(6) item 102, ManMedDept

This instruction reduces the use of the Dental Examination and Treatment Record, NavMed-1299, to those circumstances where it is required to meet local needs, and provides for its destruction instead of forwarding it to the Naval Records Management Center.

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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PREVENTIVE MEDICINE SECTION

Training

Postgraduate Training in Preventive Medicine

A notice inviting medical officers of the Regular Navy, Lieutenant Commander or below, who have had sea or foreign duty, and who desire a career in preventive medicine to make immediate application, appeared in the U.S. Navy Medical News Letter, Vol. 23, No. 9, of 14 May 1954 on pages 23-24.

A complete list of institutions accredited by the American Public Health Association, as listed in the American Journal of Public Health, July 1953, is given below:

Institution	Degree for which Accredited		
	Master of Public Health (M.P.H.)	Doctor of Public Health (Dr.P.H.)	Master's Degree in Public Health other than the M.P.H.
University of California School of Public Health Berkeley 4, Calif. C. E. Smith, M. D., Dean	X	X	
Columbia University School of Public Health New York 32, N. Y. H. W. Brown, M. D., Director	X	X	X
Harvard University School of Public Health Boston 15, Mass. J. S. Simmons, M. D., Dean	X	X	X
Johns Hopkins University School of Hygiene and Public Health Baltimore 5, Md. E. L. Stebbins, M. D., Director	X	X	
University of Michigan School of Public Health Ann Arbor, Mich. H. F. Vaughan, Dr.P.H., Dean	X	X	
University of Minnesota School of Public Health Minneapolis 14, Minn. G. W. Anderson, M. D., Director	X		X

Institution	Degree for which Accredited		
	Master of Public Health (M.P.H.)	Doctor of Public Health (Dr.P.H.)	Master's Degree in Public Health other than the M.P.H.
University of North Carolina School of Public Health Chapel Hill, N. C. E. G. McGavran, M. D., Dean	X	X	X
University of Pittsburgh Graduate School of Public Health Pittsburgh 13, Pa. Thomas Parran, M. D., Dean	X	X	
Tulane University Department of Public Health New Orleans 13, La. M. E. Lapham, M. D., Dean	X	X	
Yale University Department of Public Health New Haven, Conn. Ira V. Hiscock, Sc. D., Chairman	X	X	X
University of Toronto School of Hygiene Toronto 5, Ontario, Canada R. D. Defries, M. D., Director	X ⁽¹⁾		

(1) Diploma in Public Health, D.P.H.

Insect and Rodent Control

Serious Poisoning by Hexachlorocyclohexane

The authors' experience with 5 cases of BHC (benzene hexachloride) poisoning studied in considerable detail in a clinic of the University of Athens is reported.

The patients represented a small percentage of those poisoned in the area of Carpenissi during the summer of 1951. Seventy-nine persons became affected gradually in this area by a disease with the following initial symptoms: lassitude, headache, vertigo, and myalgia. Later the patients developed intestinal colic, diarrhea, stomatitis, and, finally, symptoms referable to the nervous system.

Epidemiologic research indicated that this clinical picture was caused by the improper use of an insecticidal powder, samples of which were submitted. Those affected had used the powder undissolved or in concentrated solution of unknown density either in water or in petroleum, and with these preparations they had sprinkled the ground and walls of their houses as well as their bedcovers, clothes, and, in some instances, even their bodies. Of the 79 persons affected, 18 were severely affected and 61 were slightly affected. Six deaths were reported.

Clinical and laboratory observations on 5 of the above-mentioned persons are described:

The 5 patients included members of 2 families. In one family, the mother, aged 50, was the most severely affected and died 4 days after her admission to the clinic, i. e., 29 days after the onset of symptoms. The daughter, 13 years old, was also severely affected. The father, aged 47, was the most lightly affected. In the other family, the mother, aged 31, and her son, aged 11, showed very serious symptoms. Of the 4 surviving patients, 3 were entirely cured after lengthy treatment and slow convalescence. The boy showed considerable improvement, but later became totally blind, with spastic paraplegia.

A chemical analysis proved that the insecticidal powder was 40% benzene hexachloride and that it was a mixture of the compound's 3 isomers, alpha, gamma, and delta. Through clinical and laboratory observation of 5 poisoned persons treated by the authors, a description of grave chronic poisoning in man by BHC is provided for the first time. (Arch. Indust. Hyg., Dec. 1953, E. Danopoulos, K. Melissinos, and G. Katsas)

(NOTE--The Navy policy, which restricts general issue of some of the newer insecticide concentrates and emphasizes training of operators and supervisors, is sometimes questioned as being overly conservative. It should be noted that benzene hexachloride (or lindane), when used in accordance with published precautions by qualified personnel (NavMed P-5010-10), is a safe and highly effective insecticide. The foregoing abstract is significant as a clear case of the danger inherent in the misuse of pesticides.)

Murine Typhus in the United States

Investigators of the Communicable Disease Center, U. S. Public Health Service, present the following conclusions in regard to murine typhus infection:

Murine typhus fever is widespread among domestic rats on farms and isolated rural premises in those areas of the United States where the average January temperature is 47° F. or higher and the humidity is high. Originally, it was common also in villages, towns, and cities in this area, but, because of cooperative State-Federal typhus control programs, it has been eliminated from many of these municipalities. It is spottily distributed on farms in and near the 40° to 45° F. areas and is unknown north of this area. Nevertheless, any typhus eradication program would have to be based on the thesis that any large farm, stockyard, mill, or similar premises with long-standing rat and rat ectoparasite infestation, might harbor typhus infection, particularly if located close to the 40° F. areas.

Typhus in rats apparently is not so widespread on farms in central and southern Florida because of considerable midwinter aridity there. Nevertheless, a typhus eradication program would require control on farms as well as in villages, towns, and cities. Similar conditions exist in the Los Angeles area of California.

Due to artificial heating in town and city buildings, typhus occurs considerably farther north in villages, towns, and cities than on farms and in individual rural premises. However, it is relatively easily eradicated from such areas because it is present in a low percentage of premises and is more subject to organized control. In the cooler and more arid climates, foci are smaller, more widely scattered, less stable, and more easily controlled. (Am. J. Pub. Health, Dec. 1953, C. O. Mohr, N. E. Good, and J. H. Schubert; Public Health Service, Atlanta, Ga.)

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Scrub Typhus in Thailand

Scrub typhus, which is widely distributed in Burma and Malaya, has been isolated from several species of rodents in Thailand. Members of the United States Special Technical and Economic Mission to Thailand in 1952 collected the known vector, Trombicula deliensis, and isolated 2 strains of the scrub typhus organism, Rickettsia tsutsugamushi, from rodents. Recovery was made from Rattus rattus thai and a species of Bandicota. (Am. J. Trop Med. & Hyg., Mar 1954, R. Traub, P. T. Johnson, M. L. Miesse, and R. E. Elbel)

* * * * *

Lone Star Tick as Vector of Tularemia

During the past 25 years, the number of cases of tularemia reported in the United States has averaged more than 1,000 per year. Wild rabbits and hares are generally considered to be the source of most human tularemia cases in the United States. However, data compiled in Arkansas over a 10-year period reveal that the highest incidence occurred during the tick season rather than the rabbit hunting season and that 56% of human tularemia patients had histories of tick bite, 31% had had contact with infected rabbits, and 13% of the cases were due to other causes. Recently collected data indicate that the Lone Star tick, Amblyomma americanum (Linn), is predominant in Arkansas, followed by the American dog tick, Dermacentor variabilis (Say). Pasteurella tularensis was isolated from 6 different lots of Lone Star ticks, but none of the American dog ticks taken from the same hosts at the same time were found to be positive for tularemia. (Am. J. Trop. Med. & Hyg., Mar. 1954, E. L. Calhoun)

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Potential Vectors and Reservoirs of Hemorrhagic Fever in Korea

During 1952, investigations on the epidemiology of hemorrhagic fever in Korea were conducted under the auspices of the Commission on Hemorrhagic Fever, Armed Forces Epidemiological Board.

Although the vector of hemorrhagic fever is still unknown, considerable evidence as to potential vectors has been accumulated. Russian, Japanese, and American efforts to establish or maintain the disease in a laboratory animal have so far been unsuccessful, and precise information on the mode of transmission and the natural cycle of the disease must await solution of this problem. However, a study of the characteristics of the disease in conjunction with ecological observations of local fauna has been highly significant.

Hemorrhagic fever is sporadic and rural, and consistently exhibits 2 seasonal peaks of incidence, spring and fall. Infections occur for the most part as single cases in a unit, being widely separated in time and place and obviously unrelated to one another. When small groups of cases occurred in one locality, they were not uniformly distributed but were limited to 1 or 2 platoons or squads. There has been no evidence of transmission from person to person, and the unequal distribution of cases in the small outbreaks rules out, as a source of the disease, the food and water common to the entire company. These characteristics justify the assumption that it is transmitted by some arthropod and that the reservoir is not man but some member of the local fauna.

Certain features of the epidemiology permit the immediate narrowing of the field of potential vectors, namely: (a) the occurrence of winter cases, which at one stroke virtually eliminates the flying insects; (b) the marked seasonal peaks of incidence in spring and fall; (c) the extreme localization of small outbreaks, which would indicate an arthropod of very limited individual mobility; (d) the transient infectiveness of individual foci; and (e) the ability to infect man leaving no evidence as to the site or mode of transmission in the form of itching or primary lesion.

The arthropods which most nearly fit these characteristics are limited chiefly to certain groups of ectoparasites of animals other than man, namely, ticks, fleas, bloodsucking mites (laelaptids) and chiggers (trombiculid mites). These groups were, therefore, the principal items of the initial program.

Ticks and fleas were eliminated from serious consideration as potential vectors when studies disclosed their relative scarcity or lack of marked variation in seasonal incidence. The laelaptid mites were fairly common on rodents in the hemorrhagic fever areas surveyed, but none showed any marked seasonal peaks in the spring and fall.

Chiggers (trombiculid mites) seemed to fit the observed epidemiology of hemorrhagic fever, and several striking analogies between this disease and scrub typhus were noted. In regard to the spotty distribution of the disease, it is known that chiggers may be extremely abundant in a very circumscribed area while they may be scarce or absent only 3 feet away. Focal outbreaks have occurred in groups of men simultaneously exposed to localized "chigger islands" or "typhus islands", while others in the same general vicinity escaped infection. Larval chiggers, the only parasitic stage in the life history, do not wander more than a few feet from their birthplace. It is therefore possible to have individual broods concentrated within a few square yards emerging at about the same time. Because the larvae normally feed only once, active larvae from any given brood would disappear from that spot in a relatively short time. A situation of this sort could account for the generally sporadic incidence of hemorrhagic fever and, in particular, for the localized outbreaks not followed by other cases. The group of chiggers which transmits scrub typhus does not, in general, cause itching. It was also learned that many Japanese species of chiggers are active principally during the colder three-fourths of the year and that the ectoparasites taken from Korean rodents throughout the winter included several species of chiggers. Most significant is the abundance of chiggers found on rodents in spring and fall, just before hemorrhagic fever incidence peaks, and the relatively small numbers taken during the summer when the disease incidence is low.

Several species of chiggers were collected, and the relative abundance of the respective species on different rodent hosts was noted. Most common were Trombicula pallida; Trombicula tamiyai, and Trombicula orientalis. The absence of a susceptible laboratory animal made it impossible to carry out transmission experiments. Consequently, it is somewhat hazardous to

speculate about individual species of potential vectors. It may be remarked, however, that T. pallida is the chigger species which most closely fits the curve of hemorrhagic fever incidence with due allowance for a period of incubation.

Four indigenous rodents were collected often enough to provide adequate ectoparasite data. These were: the striped field mouse, Apodemus agrarius mantchuricus Thomas; the reed vole, Microtus fortis pellicus Thomas; the Korean red-backed vole, Clethrionomys rufocanus regulus Thomas; and the Korean gray hamster, Cricetulus triton nestor Thomas.

In the light of our current knowledge, no single rodent species can be regarded definitely as a primary reservoir of hemorrhagic fever. The striped field mouse is strongly suspected as one reservoir because of its general abundance in nearly all environments. However, localized outbreaks of the disease have occurred in areas of Korea where this species has not been collected. Potential reservoirs are more likely to be found among these and other field rodents or mammals, rather than among domestic rats and mice. (Am. J. Hyg., May 1954, Lt. Col. R. Traub, MSC, USA, M. Hertig, Capt. W.H. Lawrence, MSC, USA, and Capt. T.T. Harris, MSC, USA)

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General Sanitation

Sanitary Management of Food Establishments

There is an old saying "you can't tell a book by its cover." You can, however, recognize a sanitary food establishment every time by the alertness, knowledge, know-how, and attention to details of the officer-in-charge, the manager-supervisory personnel, and other food-service workers.

Recently the commanding officer of a large continental naval air station, in recognition of the effort being made by the officers and individuals in charge of food establishments of the command, issued to those persons a letter containing many guides to good management practices. Excerpts from the letter follow. They are recommended as motivation material for indoctrination in sanitary food service for all officers and other personnel in managerial or supervisory capacity.

".... Obtaining the optimum in satisfactory food sanitation requires a continuing and energetic program exercised at all levels in a food establishment. Responsibilities at the top level are to organize, supervise, and plan.

"Proper organization requires that each individual's responsibilities be clearly defined and fully delineated. Needless to say, responsibility

must be backed up with authority, and this accompanying authority must also be defined and understood.

"Supervision must originate in the top level and come down... through intermediates. Inadequacies at the top will reflect at every level. It is often-times necessary that officers or other individuals in charge spot deficiencies, initiate action for their correction, and finally, check again to see that those discrepancies have been corrected satisfactorily. This is a continuing function. It is pointed out that officers in charge must assume full responsibility for the sanitary condition and operation of their respective food establishments.

"Each officer or individual in charge is expected to conduct at least daily inspections of his food establishment which will include, among other things, the sanitary condition and operation of the activity and the state of personal cleanliness of his subordinates....

". . . It is felt that the problem can best be met and overcome by the supervisor in his constant association with the employee. . . . Certainly the best source of sustained unpoliced quality effort is the high work interest which can be developed in the worker by the supervisor. . . ."

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Permit No. 1048

OFFICIAL BUSINESS

WASHINGTON 25, D. C.

DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, \$300